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TECHNICAL HISTORY FOR DAM SAFETY PROGRAM (1987-1988)

88-79-K

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ABSTRACT

This report includes all of the references found in the Rock Sciences Section files relating to hydraulic structures on the Mississagi, Wanapitei, Sturgeon, Niagara, Welland and Rideau Rivers. This bibliography was compiled as part of the dam safety program for 1987 and 1988.

job	file	date	report no.
44-124-575	844.3	April 6, 1988	88-79-K

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Attn: Mr. O. Bernaus/Mr. G.F. Smith

TECHNICAL HISTORY FOR DAM
SAFETY PROGRAM (1987-1988)

1.0 INTRODUCTION

As part of the Dam Safety Program, conducted by the Civil Works Department, the Rock Sciences Section of the Civil Research Department has the responsibility of compiling all available information on specific hydraulic structures. For 1987 and 1988, technical histories for structures on the Mississagi, Wanapitei, Sturgeon, Niagara, Welland, and Rideau River systems were required.

2.0 DISCUSSION

Information was tabulated for eight structures on the Mississagi, Wanapitei and Niagara Rivers. Limited information was found on the Mississagi and Wanapitei Rivers and no information was found on the Sturgeon River, Welland River and Rideau River structures. A bibliography of information on all structures found in our files is provided in Appendices A to I. The information was organized according to the "Format of Technical Histories" as set out by the Civil Works Department. All technical histories were classified under the following three items:

Item 2.3 Design Assumptions and Criteria;
Item 2.4 Construction Plans and Specifications;
Item 3.8 All Inspection Testing and Investigation Reports and Correspondence.

The tables provide the following information:

- title of document
- nature of document
- date
- prepared by (addressed to)
- report number
- file number

job	file	date	report no.
44-124-575	844.3	April 6, 1988	88-79-K

The title of the document is the title or heading of the report, memo, instruction, drawing, minutes, data, letter or summary. The name of the file is used for general information.

The nature of document provides the type of document as indicated above and a brief description to explain what the document contains.

The date refers to the month and year when the document was issued or the date when the data was recorded.

The prepared by (addressed to) indicates the author of the document or article and the person for which the document was prepared.

The report number is the number on a report at the time it was issued.

The file number is the file number on a document at the time it was issued. Many articles contained no file numbers at the time of issuance. In cases where no file numbers appeared, "lab files" has been entered to indicate that these files can be found in the Rock Sciences Section files. In some cases where the recipient of the article placed a file number on it for their own personal files, this number was included as the file number. It should be emphasized that all items contained in this report are located in the Rock Sciences Section files.

3.0 CONCLUSION

As part of the Dam Safety Program for 1987 and 1988, the Rock Sciences Section has prepared a bibliography to cover the technical histories for structures found on the Mississagi, Wanapitei, Sturgeon, Niagara, Welland and Rideau River systems. No information was found on any of the structures located on the Sturgeon, Welland and Rideau River systems.

ACKNOWLEDGMENTS

Report No. 87-160-H prepared by Mr. E.J. McColm and Mr. P.K. Mukherjee, both of the Concrete Technology Section, is acknowledged since it was used as a guideline for this report.

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APPENDIX A

AUBREY FALLS GS (MISSISSAGI RIVER)

		Page
Item 2.3	Design Assumptions and Criteria	4
Item 2.4	Construction Plans and Specifications	6

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.3-DESIGN ASSUMPTIONS AND CRITERIA
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Aubrey Falls GS
RIVER SYSTEM - Mississagi River
PERIOD - 1966-1967

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Gravel for Aubrey Falls GS	Report	Petrographic analysis of crushed gravel for possible use in concrete	8/66	L. Dolar-Mantuani (D.G. Watt)	S66-48-H	848 AVB-1
2	Characteristics of Sands from Miller's Pits-Aubrey Falls GS	Report	Petrographic analysis of sand for possible use in concrete	9/66	L. Dolar-Mantuani (D.G. Watt)	S66-54-H	848 AVB-1 X821.14
3	Characteristics of Gravel, Aubrey Falls GS	Report	Petrographic analysis of gravel for possible use in concrete	10/66	L. Dolar-Mantuani (D.G. Watt)	S66-59-H	848 AVB-1 X821.14
4	Drill Cores from Aubrey Falls (Preliminary Report)	Report	Petrographic analysis of drill cores for possible use in concrete	11/66	L. Dolar-Mantuani (D.G. Watt)	S66-68-H	848 AVB-1 X821.14
5	Granite and Diabase Crushed From Drill Cores from Aubrey Falls	Report	Petrographic analysis of drill cores for possible use in concrete	12/66	L. Dolar-Mantuani (D.G. Watt)	S66-75-K	848 AVB-1 X821.14
6	Characteristics of Sand From Peshu Lake Test Pits, Aubrey Falls	Report	Petrographic analysis of sand for possible use in concrete	1/67	L. Dolar-Mantuani (D.G. Watt)	S67-4-H	848 AVB-1 X821.14
7	Drill Core Samples From Aubrey Falls Area (Suitability as Concrete Aggregates)	Report	Petrographic analysis of rock cores for possible use as concrete aggregate	6/67	L. Dolar-Mantuani (R.W. Chandler)	67-261-H	848 AVB-1 X821.14

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.3-DESIGN ASSUMPTIONS AND CRITERIA
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Aubrey Falls GS
RIVER SYSTEM - Mississagi River
PERIOD - 1966-1967

Item No	Title of Document	Nature of Document Type	Nature of Document Text	Date	Prepared by (Addressed to)	Report No	File No
8	Characteristics of Excavation Rocks, Aubrey Falls GS (Preliminary Report)	Report	Petrographic analysis of excavated rock for use as use as concrete aggregate	9/67	L. Dolar-Mantuani (D.G. Watt)	S67-59-H	848 AVB-1 X821.14
9	Expansion Due to Feldspar-Aubrey Falls GS	Report	Determination of thermal expansion of coefficients of feldspar with respect to concrete expansion	11/67	L. Dolar-Mantuani (D.G. Watt)	S67-71-H	848 AVB-1 X821.14
10	Dyke Rocks From Aubrey Falls GS (Powerhouse Area, Locations 1 to 6)	Report	Petrographic analysis of dyke rocks with respect to possible alteration properties	12/67	L. Dolar-Mantuani (D.G. Watt)	S67-74-H	848 AVB-1 X821.14
11	Characteristics of Main Excavation Rock, Aubrey Falls GS	Report	Petrographic examination of crushed excavation rock for use as concrete aggregate	12/67	L. Dolar-Mantuani (D.G. Watt)	S67-76-H	848 AVB-1 X821.14

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.4 - CONSTRUCTION PLANS AND SPECIFICATIONS
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Aubrey Falls GS
RIVER SYSTEM - Mississagi River
PERIOD - 1967

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Visit to Construction Sites at Aubrey Falls GS	Report	Site visit and examination of rock	8/67	L. Dolar-Mantuani (D.G. Watt)	S67-47-H	848 AVB-1 X821.14

APPENDIX B

RAYNOR GS (MISSISSAGI RIVER)

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Item 2.3	Design Assumptions and Criteria	8

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.3 - DESIGN ASSUMPTIONS AND CRITERIA
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Rayner GS
RIVER SYSTEM - Mississagi River
PERIOD - 1968

Item No	Title of Document	Nature of Document Type	Nature of Document Text	Date	Prepared by (Addressed to)	Report No	File No
1	Crushed Gravel from Old Rayner GS Pit	Report	Petrographic analysis of gravel	7/68	L. Dolar-Mantuani (D.G. Watt)	68-55-H	821.14

APPENDIX C

RED ROCK FALLS GS (MISSISSAGI RIVER)

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Item 2.3	Design Assumptions and Criteria	10
Item 3.8	Inspection Testing and Investigation Reports	11

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.3 - DESIGN ASSUMPTIONS AND CRITERIA
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Red Rock Falls GS
RIVER SYSTEM - Mississagi River
PERIOD - 1958-1959

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Preliminary Report on Rocks from the Red Rock Area	Report	Petrographic analysis of rocks in the Red Rock area	9/58	L. Dolar-Mantuani (D.G. Watt)	M58-75	821.Red X821.14
2	Petrographic Examination of One Gravel and Two Sand Samples From Red Rock	Report	Petrographic analysis of gravel and sand for use in concrete	2/59	L. Dolar-Mantuani (D.G. Watt)	M59-7	821.Red X821.14

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING AND INVESTIGATION REPORTS
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Red Rock Falls GS
RIVER SYSTEM - Mississagi River
PERIOD - 1961

Item No	Title of Document	Nature of Document Type	Nature of Document Text	Date	Prepared by (Addressed to)	Report No	File No
1	Influence of Handling of Air Void Characteristics of Concrete	Report	Microscopic examination of air void characteristics of Red Rock GS concrete	10/61	L. Dolar-Mantuani (H.C. Ross)	61-272	821.2532 X821.14

APPENDIX D

CONISTON GS (WANAPITEI RIVER)

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Item 3.8	Inspection Testing/Investigation Reports/ Correspondence	13

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Coniston GS
RIVER SYSTEM - Wanapitei River
PERIOD - 1980

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Reactivity of Concrete Aggregates	Memo	Examination for concrete distress	7/80	R. Koopmans (K.K. Chiu)		844.2

APPENDIX E

GENERAL (NIAGARA RIVER)

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Item 3.8	Inspection Testing/Investigation Reports/ Correspondence	15

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - General
RIVER SYSTEM - Niagara River
PERIOD - 1964-1973

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Characteristics of Crushed Coarse Aggregate from Three Quarries Along Niagara Escarpment	Report	Petrographic analysis of crushed aggregate samples from three quarries along the Niagara Escarpment	6/64	L. Dolar Mantuani (H.C. Ross)	65-226	848.Bec-1 X821.14
2	Petrographic Characteristics of Niagara River and Bar Sand	Report	Discussion of petrographic analysis of Niagara River and Bar Sand	9/65	L. Dolar Mantuani (T.G. Clendenning)	M65-45	848 Bec-1
3	Rock Conditions-Niagara River Plants	Memo	Discussion of rock stability for Toronto Power, OPGS and Sir Adam Beck GS No 1	1/73	N.D. Lindsay (W.J. Jackson)		411.1-2032
4	Rock Conditions-Niagara River Plants	Memo	Need for further study of cliff stability at Sir Adam Beck-No 1 and OPGS	6/73	J.L. Alexander (W.G. Morison)		411.1-2052
5	Rock Conditions-Niagara River Plants	Memo	Discussion of rock stability requirements for Sir Adam Beck 2 and OPGS	7/73	W.G. Morison (J.L. Alexander)		Lab File
6	Rock Conditions-Niagara River Plants	Memo	Summary of rock stability programs for OPGS and Sir Adam Beck Niagara GS No 1	8/73	J.L. Alexander (C.S. Elliott)		411.1-2052

APPENDIX F

ONTARIO POWER GS (NIAGARA RIVER)

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Item 3.8	Inspection Testing/Investigation Reports/ Correspondence	17

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1986

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Cliff Sections Following Scaling Operations of 1957	Drawing	Shows change in cliff cross sections from 1903 to 1957	2/58		10-5-482	5-B-1523
2	OPGS-Rock Stability Instrumentation	Report	Discussion of installation of alignment stations and triangulation stations	10/63	T.R. Allan (D.G. Watt)	M63-49	
3	OPGS-Rock Stability Studies-Measurement of Plumb Line Stations in the Lower Elevator Shaft	Memo	Procedure for plumb line measurements in lower shaft	5/64	D.G. Watt (W.A. Traill)		825.111(P)
4	OPGS-Wire Extensometers-Niagara Falls	Instr	Instructions on how to read wire extensometers	12/64	C.O. Emery		
5	OPGS-Rock Movement Measurements-Interim Report No 2	Memo	Trend of readings, methods, of analysis and preliminary analysis	2/65	P.L. Hooper (J.O. Gorman)		411.1-P
6	OPGS-Cliff Stability	Memo	Instructions for instrument readings	3/65	T.B. Reynolds (R.S. Griffin)		411.1-2052-P
7	Ontario Cliff Stability Rock Movements-Measurements Interim Report No 3	Memo	Memo and figures showing extensometer and bolt meter movements	4/65	P.L. Hooper (J.O. Gorman)		411.1-2052

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
8	Regression Analysis of Rock-Bolt Load Readings at OPGS Rock Cliff	Report	Analysis of first eleven sets of readings for rock bolts and tension meters	4/65	D.G. Havard (O.E. Johnston)	65-147	825.112(OP)
9	OPGS-Cliff Stability Studies-Review of Cliff Face Instrumentation	Memo	Discussion of rock bolt meters and rod extensions	7/65	P.L. Hooper (J.O. Gorman)		411.1-2052-P
10	OPGS-Cliff Stability Studies Interim Report No 4	Memo	Detailed analysis of cliff face instrumentation readings and preliminary study of cliff face ground-water conditions	6/65	P.L. Hooper (J.O. Gorman)		411.1-2052-P
11	Ontario Power Generating Station-Cliff Stability	Letter	Readings for rock bolt tension meters and borehole extensometers	7/65	O.E. Johnston (C.L. Emery)		411.1-2052
12	Ontario Power GS-Rock Movement Analysis-Progress Report #2	Memo	Continuation of the analysis of readings from the Ontario Power Valve Chambers	8/65	P.L. Hooper (J.O. Gorman)		411.1-2052
13	Ontario Power GS-Rock Movement Analysis-Progress Report	Memo	Analysis of readings obtained from various instruments to measure rock movements at various locations in the plant	8/65	P.L. Hooper (J.O. Gorman)		411.1-2052

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ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
14	OPGS-Rock Movement Analysis-Progress Report No 3	Memo	Memo and figures showing rock movement in valve chambers	2/66	P.L. Hooper (J.O. Gorman)		411.1-2052
15	OPGS-Rock Movement Analysis-Progress Report No 4	Memo	Memo and figures showing rock movement in elevator shaft and lower tunnel	2/66	P.L. Hooper (J.O. Gorman)		411.1-2052-P
16	OPGS-Cliff Stability	Memo	Discussion of instrumentation for cliff stability	7/67	I.B. Reynolds (M.H. Pryce)		246-3-1
17	Cliff Stability-Ontario Power GS	Memo	Discussion of rock cliff stability	2/68	M.H. Pryce (R.S. Griffin)		Lab File
18	OPGS-Geodimeter Readings-Analysis of Results to Date	Memo	Brief analysis of geodimeter readings	3/68	P.L. Hooper (J.O. Gorman)		Lab File
19	OPGS-Rock Cliff Stability Studies	Report	Summarize all data obtained from instrumentation from Jan/63 to March/69	11/69	G. Gung (W.G. Morison)	69-395-H	825.111
20	Investigation of Rock Conditions-Table Rock House Observation Deck-Niagara Falls	Report	Results of an investigation of the rock condition is presented	10/72	Golder Associates (Niagara Parks Commission)	72119	

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document Type	Nature of Document Text	Date	Prepared by (Addressed to)	Report No	File No
21	Rock Conditions-OPGS	Memo	Summary of meeting to discuss rock conditions at OPGS	2/73	T.J. Gardner (File)		OPGS-411
22	OPGS-Rock Slope Stability Studies-Proposed Geological Field Program No 1	Memo	Proposed field program	10/73	A. Cohen (J.O. Gorman)		Lab File
23	OPGS-Rock Cliff Protection by Shotcreting	Memo	Discussion of repairs of shotcrete protection west of powerhouse	10/73	O. Bernaus (J.L. Alexander)		Lab File
24	OPGS-Rock Cliff Stability Studies-Proposed Addendum Geological Field Program No 1	Memo	Observation of certain features inside Ontario Power Plant	11/73	A. Cohen (J.O. Gorman)		Lab File
25	OPGS-Rock Slope Stability Studies	Memo	Discussion of rock slope stability	2/74	J.L. Alexander (W.G. Morison)		411.1-2052
26	Rock Slope Stability Studies-OPGS	Instruction	Procedure for field surveillance and reporting	2/74			Lab File
27	Rock Slope Stability Studies-OPGS	Memo	Discussion of visual inspections and measurements on rock movement	3/74	D.E. Nash (C.S. Elliott)		411.1-2052

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
28	Progress Report-Rock Slope Stability Studies-OPGS	Memo	Discussion of rock slope stability observations	7/74	D.E. Nash (C.S. Elliott)		411.1-2052
29	OPGS-Rock Stability	Memo	Draft of preliminary work scope	9/74	J.O. Gorman (W.G. Morison)		992-246-3-1
30	OPGS-Rock Stability	Memo	Notes on meeting	9/74	W.G. Morison (File)		Lab File
31	OPGS-Rock Stability Progress Report	Memo	Responsibilities for rock stability program	10/74	J.O. Gorman (W.G. Morison)		992-246-3-1
32	OPGS-Extensometer Installation	Memo	Comments relative to extensometer installation	11/74	A.D. Hogg (J.O. Gorman)		825.142(T)
33	Ontario Power Generating Station	Letter	Letter and minutes of of meeting between Ontario Hydro and Acres	11/74	Acres (Ontario Hydro)		P3921.00
34	OPGS-Rock Cliff Stabilization Studies	Letter	Response to Acres' letter of December 11, 1974	11/74	J.O. Gorman (Acres)		411.2052
35	OPGS-Rock Cliff Stabilization	Letter	Confirmation by Acres to undertake rock cliff stabilization program	11/74	Acres (Ontario Hydro)		P3921.00
36	OPGS-Rock Cliff Stabilization	Letter	Consideration of buried services	11/74	Acres (Ontario Hydro)		P3921.00

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
37	OPGS-Extensometer Installation	Memo	Safety concerns with respect to extensometer installation	12/74	J.O. Gorman (A.D. Hogg)		999.246.3.1
38	File-OPGS Instrumentation Readings	Data	Readings for rock movement and flow observations	1973-1974			Lab File
39	Ontario Power Generating Station	Minutes	Minutes of meeting between Acres and Ontario Hydro with respect to cliff stabilization program	2/75	Acres		3921.06.01
40	OPGS Cliff Stability-Visit to Site	Memo	Firsthand impressions of cliff face condition	3/75	A.D. Hogg (File)		825.142(P)
41	Cliff Face-Sections at Horizontal Holes	Drawing	Shows cross sections of rock face where holes were drilled	5/75	Acres (Ontario Hydro)	3921-E-0203	

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
42	Cliff Face Elevation-Location of Horizontal Holes and Surficial Blocks	Drawing	Shows elevation location of horizontal holes	5/75	Acres (Ontario Hydro)	3921-E-0202	
43	OPGS Rock Cliff Stabilization Report (Acres) Phase II and III	Memo	Summary of Acres report	2/76	J.I. Adams (J.O. Gorman)		843 OPGS
44	The Significance of Some Rock Mechanics Tests at OPGS	Report	Report on rock mechanics testing conducted as part of cliff stability investigation	4/76	T.J. Carmichael	76-184-H	844.2
45	Stress Relief and Cliff Stability at OPGS	Report	Report on stress relief and cliff stability at OPGS	5/76	C.F. Lee (J.H. Waghorne)	76-204-H	843.2
46	Location of Pressure Relief and Exploratory Drill Holes	Drawing	Acres drawing showing pressure relief and exploratory drill holes at OPGS	7/76	B. Lukajic (Ontario Hydro)		3921-0-0302
47	OPGS-Rock Cliff Stabilization Addendum 1	Memo	A review of the seismic activity in the Niagara Region	11/76	G. Tindale (W.G. Morison)		Lab File
48	OPGS-Proposed Extensometer Installation	Memo	Recommended location of proposed extensometer	5/77	B. Lukajic (J.I. Adams)		992.825.142P

DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY

ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE

(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
49	Ontario Power Generating Station Instrumentation	Memo	Review of installed instrumentation, overall plan for long term monitoring program	6/77	B. Lukajic/ J.I. Adams (J.O. Gorman)		992,NF25-10120P
50	Notes on Surveillance and Instrumentation-OPGS	Memo	Discussion of extensometers, pressure relief holes, piezometers, visual inspection and photography	6/77	D.R. McCreath/ B. Lukajic (Ontario Hydro)		P3921
51	File-Drilling Valve Chamber	General	Borehole investigation data	1977	D.A. McKay		Lab File
52	Drilling on Tunnel One-OPGS	Report	Locations of drill holes and drill logs	1/78	R.W. Hughes (D.E. Nash)	S78-2-H	844.0
53	Interim Report: Borehole Extensometer Readings at OPGS	Report	Results of measurements for extensometers OP-1, OP-2 and OP-3	7/78	P. Hoogendam (G.A. Gorman)	B78-120-K	825.142
54	OPGS-Cliff Stability Instrumentation and Visual Observation	Minutes	Minutes of meeting to discuss cliff extensometers	7/79	L.G. Moanloy (File)		Lab File
55	Ontario Power GS-Conduit No 1	Memo	Investigate foundation conditions beneath buckled sections of conduit No 1	9/79	G.F. Smith (T.J. Carmichael)		Lab File

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INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
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STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
56	OPGS-Foundation Investigation Beneath Conduit One	Report	Report on drilling investigation beneath conduit one	10/79	R.W. Hughes (G.F. Smith)	S79-42-H	844.3
57	File-OPGS Extensometer Readings	Tables	Readings from Sept/77-Dec/79 for extensometers H(20,21,40,50)	1977-1979	D. Willson/ R. Poljanowski		Lab File
58	File-Pressure Relief Hole Inspection and Piezometer Readings-OPGS	Memos	A series of memos providing extensometer and pressure relief hole data	1978-1980	E.E. Weaver (File)		Lab File
59	File-Discharges for Pressure Release Holes #PR101-PR154	Data	Data sheets for pressure relief holes	1979-1980			Lab File
60	File-Long Term Extensometers	General	Logs, figures, sections, details on drilling and preparations for extensometer installations in the valve chamber	1979-1980	D.A. McKay (G.A. Gorman)		Lab File
61	File-OPGS-Niagara Cliff Stability-OP-1	General	Results of OP-1 extensometer, T.V. borehole logging	1975-1981			Lab File

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STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
62	File-OPGS-Niagara Cliff Stability-OP-2	General	Results of OP-2 extensometer	1977-1981			Lab File
63	File-OPGS-Niagara Cliff Stability-OP-3	General	Results of OP-3 extensometer	1978-1981			Lab File
64	File-OPGS-Valve Chamber Measurements	Tables	Chainage measurements for OPGS Lower Tunnel	1978-1981	Various		Lab File
65	OPGS-Extensometer OP-1 Explanation of the Working of Extensometer OP-1	Report	Discussion of how extensometer OP-1 works	6/81	D.A. McKay (M.H. Pryce)	S81-38-H	844.33
66	Extensometer OP-4 Installation	Report	Details on installation of extensometer OP-4	10/81	R.W. Hughes/ J.B. Williams (T.J. Carmichael)	S81-57-K	844.33
67	Installation of an Extended Life Extensometer in the Valve Chamber at OPGS	Report	Details on installation of extensometer OP-4	11/81	D.A. McKay (M.H. Pryce)	81-379-H	844.3
68	File-OP-4 Thermocouple Readings	Tables	Thermocouple Readings from Extensometer OP-4	1981	D. McKay/ J.B. Williams		Lab File
69	File-Extensometer OP-4 Anchor and Thermocouple Readings	General	Results of OP-4 extensometer and thermocouples	1981-1982			Lab File

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STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document Type	Nature of Document Text	Date	Prepared by (Addressed to)	Report No	File No
70	File-OPGS-Niagara Cliff Stability-OP-4	General	Results of OP-4 extensometer	1981-1983			Lab File
71	OPGS Cliff Stability Monitoring Sliding Micrometer Installation	Report	Details of sliding micrometer installation	5/86	D.A. McKay (J.V. Doyle)	86-41-H	844.33
72	Sliding Micrometer Results (OP-5)	Memo	Sliding micrometer results from Aug 1/85 to Apr 11/86	5/86	J.B. Williams (J.V. Doyle)		844.33(T)
73	Remote Monitoring of OPGS Valve Chamber Extensometers	Report	Installation of remote monitoring system for OP-2, OP-3 and OP-4	6/86	R. Koopmans/ R.W. Hughes (J.V. Doyle)	86-168-K	844.33
74	Update of OP-5 - Sliding Micrometer Results	Memo	Sliding micrometer results from May 9/86 to July 11/86	7/86	J.B. Williams (J.V. Doyle)		844.33(T)
75	Update of OP-5 - Sliding Micrometer Data	Memo	Complete set of data for sliding micrometer	7/87	J.B. Williams (J.V. Doyle)		844.33(T)
76	OP-5 Sliding Micrometer Update	Memo	Sliding micrometer results from April to August 1987	8/87	J.B. Williams (J.V. Doyle)		844.33(T)

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STRUCTURE - Ontario Power GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1987

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
77	OP-5 Sliding Micrometer Update	Memo	Sliding micrometer results from September 1987	9/87	J.B. Williams (J.V. Doyle)		844.33(T)
78	OP-5 Sliding Micrometer Update	Memo	Sliding micrometer results from April to December 1987	12/87	J.B. Williams (J.V. Doyle)		844.33(T)
79	OP-5 Sliding Micrometer Update	Memo	Sliding micrometer results for January 1988	1/88	J.B. Williams (J.V. Doyle)		844.33(T)

APPENDIX G

SIR ADAM BECK GS 1 (NIAGARA RIVER)

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STRUCTURE - Sir Adam Beck GS No 1
RIVER SYSTEM - Niagara River
PERIOD - 1932

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Petrographic Examination of Nailable Concrete in Fence Posts from Sir Adam Beck-Niagara GS No 1	Report	Petrographic examination of aggregate in concrete posts	5-6/52	L. Dolar-Mantuani (W.P. Dobson)	52-676	RP22

APPENDIX H

SIR ADAM BECK GS 2 (NIAGARA RIVER)

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DAM SAFETY TECHNICAL HISTORY - BIBLIOGRAPHY
ITEM 2.3 - DESIGN ASSUMPTIONS AND CRITERIA
(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Sir Adam Beck GS No 2
RIVER SYSTEM - Niagara River
PERIOD - 1953-1956

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Petrographic Examination of Foreign Material in a Recent Delivery of Lake Sand	Report	Petrographic examination of material used in concrete proportioning studies for Sir Adam Beck GS No 2	2/53	L. Dolar-Mantuani (D.R. Kempton)	M53-15	36.4.232
2	Identification of Minerals from the Hydraulic Tunnel No 1 of the Sir Adam Beck Niagara GS No 2	Report	Petrographic analysis of minerals from the hydraulic tunnel No 1	3/53	L. Dolar-Mantuani (J.O. Gorman)	53-152	36.4.332
3	Silt from Bottom of Trapezoidal Section of Canal-Sir Adam Beck Niagara GS No 2	Report	Petrographic analysis of material that flowed into bottom of canal	3/53	L. Dolar-Mantuani (D.R. Kempton)	53-18	36.4.232
4	Distinction Between Dolomitic Rocks from Two Formations in the Sir Adam Beck, Niagara GS No 2 Area	Report	Comparison of Lockport and Guelph dolomites	5/53	L. Dolar-Mantuani (J.O. Gorman)	M-53-258	36.4.232
5	Petrography of Crusher Dust as Effecting Filter Bed Performance. Sir Adam Beck Niagara GS No 2	Report	Petrographic study of crusher dust for use as as filter blanket on the channel slope	7/53	L. Dolar-Mantuani (H.C. Ross)	52-514	36.69.56
6	Comparison of Three Sand Samples Considered for Grouting at the Sir Adam Beck Niagara GS No 2	Report	Comparison of three sand samples of adequate grading for use as grouting material	8/53	L. Dolar-Mantuani (T.G. Clendenning)	M-53-50	36.4.232

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ITEM 2.3 - DESIGN ASSUMPTIONS AND CRITERIA
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STRUCTURE - Sir Adam Beck GS No 2
RIVER SYSTEM - Niagara River
PERIOD - 1953-1956

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
7	Petrographic Examination of Gravel Sample from Sir Adam Beck GS Reservoir	Report	Petrographic analysis of sample from a layer just above bedrock at the reservoir site	7/55	L. Dolar-Mantuani (D.G. Watt)	M55-58	822.3 Bec 2
8	Visit to Sir Adam Beck GS No 2 Project	Report	Examination of concrete cemetery, Queenston aggregates, tailrace, Queenston Quarry and Sir Adam Beck-Niagara GS No 2	6/56	L. Dolar-Mantuani (D.G. Watt)	M56-62	821 Bec 2
9	Petrographic Examination of Crushed Coarse Aggregate From the Queenston Quarry	Report	Determination of quality for use in concrete for completion of Sir Adam Beck plant	6/56	L. Dolar-Mantuani (D.G. Watt)	M56-68	821 Bec 2x 821.14
10	Coarse Aggregate Used at the Sir Adam Beck-Niagara No 2 Project	Report	Determination of performance differences among three aggregate samples	9/56	L. Dolar-Mantuani (D.G. Watt)	M56-95	821.14 x 821 Bec 2

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ITEM 3.8 - INSPECTION TESTING/INVESTIGATION REPORTS/CORRESPONDENCE
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STRUCTURE - Sir Adam Beck GS No 2
RIVER SYSTEM - Niagara River
PERIOD - 1964-1981

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Identification of Rock Samples From Niagara Escarpment	Report	Petrographic identification of five drill core samples of rocks in the lower elevator shaft at Sir Adam Beck GS No 2	4/64	L. Dolar-Mantuani (D.G. Watt)	M64-17	821.4
2	Petrographic Characteristics of Moyer Sand (Used in Guniting of Canal)	Report	Comparison of gunite sand sample with that used formerly in proportioning studies for Sir Adam Beck GS	9/64	L. Dolar-Mantuani (J.N. Mustard)	M64-43	848 Bec-1 X821.44 X821.14
3	Characteristics of Old Gunite From Niagara River	Report	Examination of 40-year-old gunite on rock wall of the Niagara Canal	9/64	L. Dolar-Mantuani (H.C. Ross)	64-348	848 Bec-1 X821.44 X821.14
4	Determination of Sulphates in Gunite Lining of Niagara Canal	Report	Sulphate attack may have been a factor in the failure of the old gunite lining	11/64	L. Dolar-Mantuani (T.G. Clendenning)	M64-52	848 Bec-1 X821.44 X821.14
5	Petrographic Characteristics of Moyer Sand-Sir Adam Beck Niagara GS No 2	Report	Petrographic analysis of sand sample intended for concreting and guniting rehabilitation work at the Niagara Canal	5/65	L. Dolar-Mantuani (J.N. Mustard)	M65-26	848 Bec-1 X821.44 X821.14

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(CIVIL RESEARCH - ROCK SCIENCES ACTIVE FILES)

STRUCTURE - Sir Adam Beck GS No 2
RIVER SYSTEM - Niagara River
PERIOD - 1964-1981

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
6	Sir Adam Beck-Niagara GS No 2	General	A series of figures and tables of Sir Adam Beck in relationship to the geology	1951-1970			Lab File
7	Sir Adam Beck-Niagara Generating Station No 2-A Resume of the Engineering Geology	Summary	A description of geology with respect to the intake, tunnel, canal, headworks, powerhouse etc.	8/72	Geotechnical Department		Lab File
8	Sir Adam Beck-Niagara GS No 1 and No 2-Review of Flow Capacity, Tunnels and Canals	Memo	Memo to discuss report (see below)	6/77	J.B. Bryce (W.G. Morison)		Lab File
9	Sir Adam Beck-Niagara GS No 1 and No 2 - Review of Flow Capacity Determined by Field Tests (1954-1977)	Report	Determination of changes with respect to the flow carrying capabilities in the tunnels and canals	6/77		77104	
10	Sir Adam Beck: Access Road Seismic Survey	Report	Determination of overburden depth on the access road	7/81	R. Koopmans (B.J. Lukajic)	81-243-H	844.2

APPENDIX I

SIR ADAM BECK-NIAGARA PUMPING STATION (NIAGARA RIVER)

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STRUCTURE - Sir Adam Beck-Niagara Pumping GS
RIVER SYSTEM - Niagara River
PERIOD - 1958-1985

Item No	Title of Document	Nature of Document: Type	Nature of Document: Text	Date	Prepared by (Addressed to)	Report No	File No
1	Petrographic Examination of Rock Samples from SAB Dam	Report	Petrographic examination of rip rap in connection with dyke failure at SAB pumped storage area	8/58	L. Dolar-Mantuani (D.G. Watt)	M58-63	821 Bec 2 X821.14
2	Automation of Weirs at Sir Adam Beck's Pumped Storage Reservoir	Report	Automation of two weirs at Sir Adam Beck's pumped storage reservoir	6/85	R. Koopmans/ R.W. Hughes (H.M. Steckley)	85-162-K	844.33